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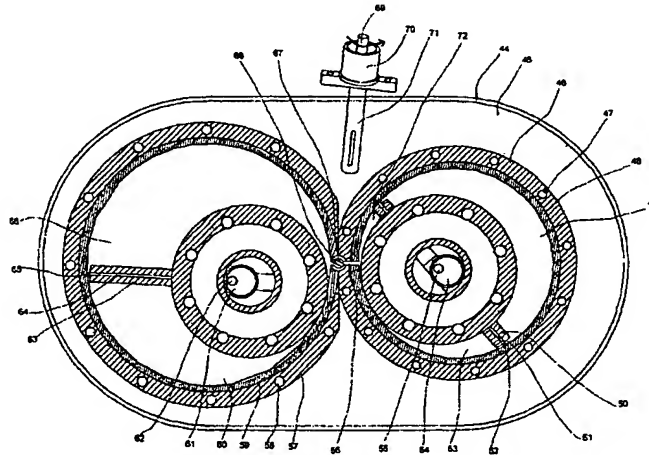
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(54) Title: ROTARY VANE ENGINE AND THERMODYNAMIC CYCLE



(57) **Abstract:** For low mass flow, the solo use of the turbo-rotary engine overcomes the limitations of conventional internal combustion engines and enable significant improvement in power, torque and efficiency. The solo configurations (Figure 1, 2, 3, 4) of the invention comprise compressor (48) and turbine housings (59), each housing receiving an eccentrically placed rotor (135), equipped by a single sliding vane (50, 63). Contact wear of the sliding vane tips (86, 109) with the chamber non-circular cycloidal peripheral (88, 97), is eliminated by a pivot axle vane retention mechanism (139, 150). For high mass flow rate, a compound configuration (Figures 8, 9, 10) of rotary compressors and turbines with conventional gas turbine engine components. Allows an improvement in efficiency and performance. Conventional long and heavy concentric main shafts are eliminated. In this invention, rotary turbines drive compressors (158), fans (153), propellers and rotary wings (186). In return, the conventional turbines (171) drives a plurality or rotary compressors (164, 166, 168). The compound engine of the invention combines the thermal efficiency of the rotary internal engine cycle (151) and the high mass flow, high power, compact size and light weight of the gas turbine engines.

WO 2004/022919 A1





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